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# 2021/22 NOAA Winter Outlook Perspective for the Lower Rio Grande Valley/Deep S. Texas Region

November 19, 2021

Barry Goldsmith, NWS Brownsville/Rio Grande Valley, Texas



# The Seasonal Forecast - USA



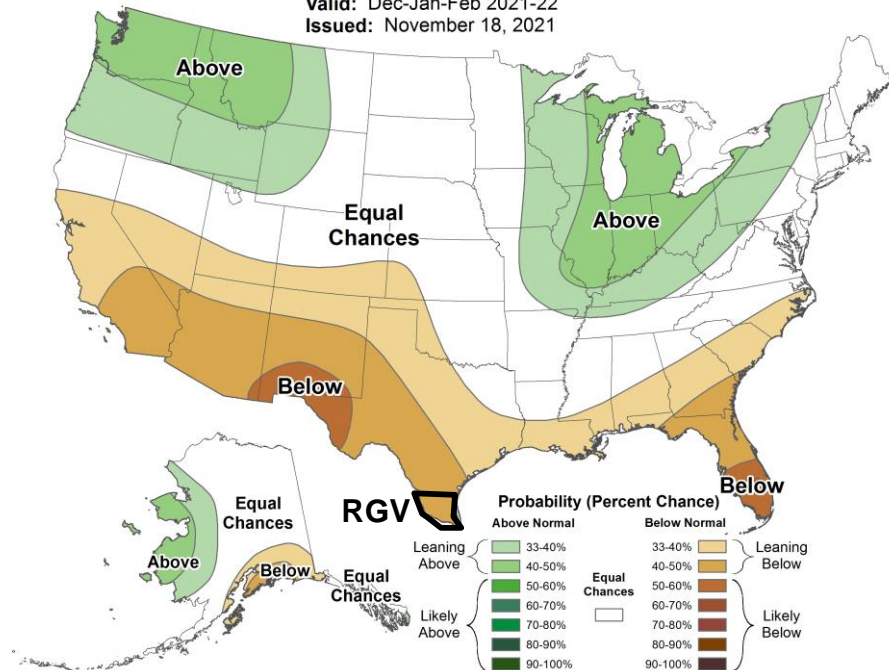
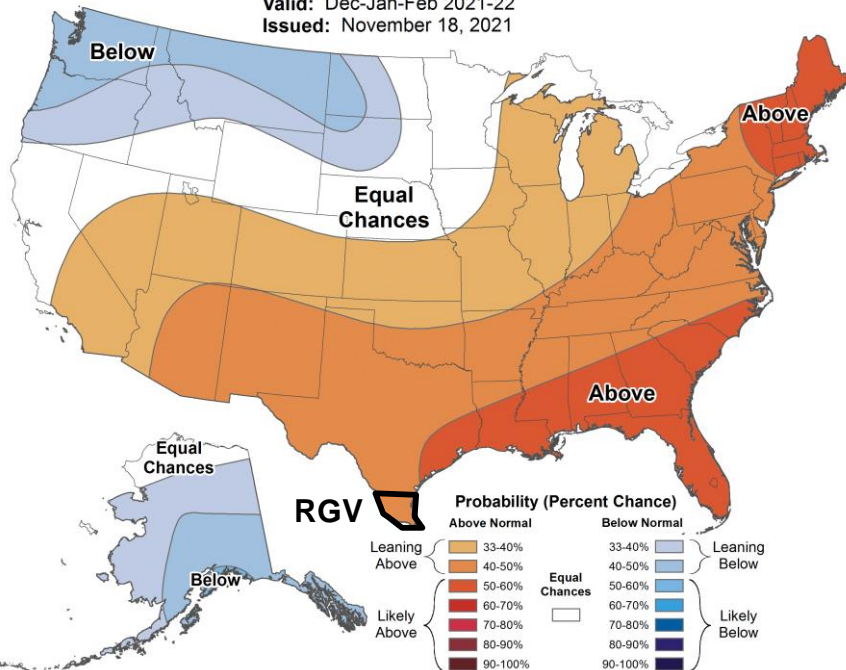
## Seasonal Temperature Outlook

Valid: Dec-Jan-Feb 2021-22  
Issued: November 18, 2021



## Seasonal Precipitation Outlook

Valid: Dec-Jan-Feb 2021-22  
Issued: November 18, 2021



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# Key Takeaways

- Above to much above average temperatures and below/much below average precipitation is forecast...like the forecast for last winter
- Should this forecast become reality:
  - **Drought** *should* redevelop and **worsen by the end of February**. A likelihood of severe to exceptional (level 2/3) drought across parts of the Rio Grande Plains, Brush Country, and “upper” Valley
  - **Municipal and Agricultural water shortages** could become an issue by spring as Falcon Reservoir may drop to its **lowest values in more than 30 years**.
  - **Several freezes are possible** despite the warm/dry forecast, based on occasional atmospheric pattern shifts that would allow polar air to plunge into Texas. ***It is impossible to predict if a repeat of Feb. 2021 will occur.***
  - **Wildfire spread threat will gradually increase through the season**, based on the availability of fuels including grass, brush, and trees and the expected warmth and drought.



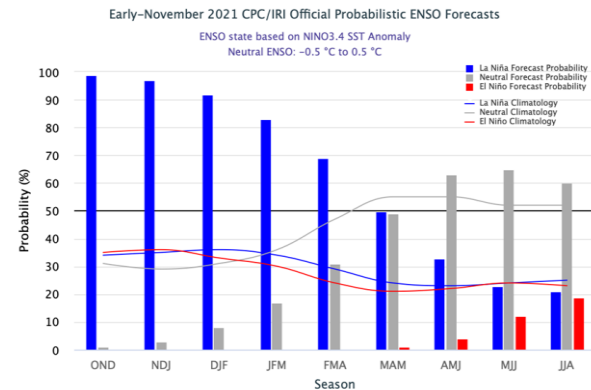
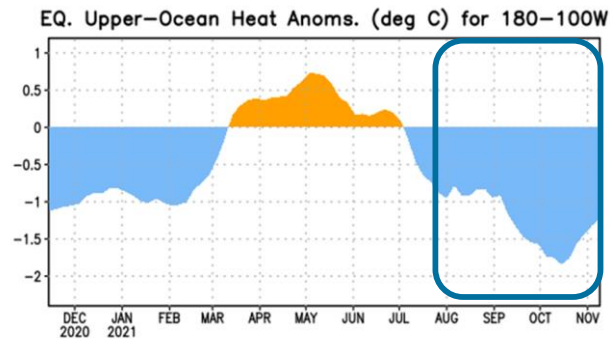
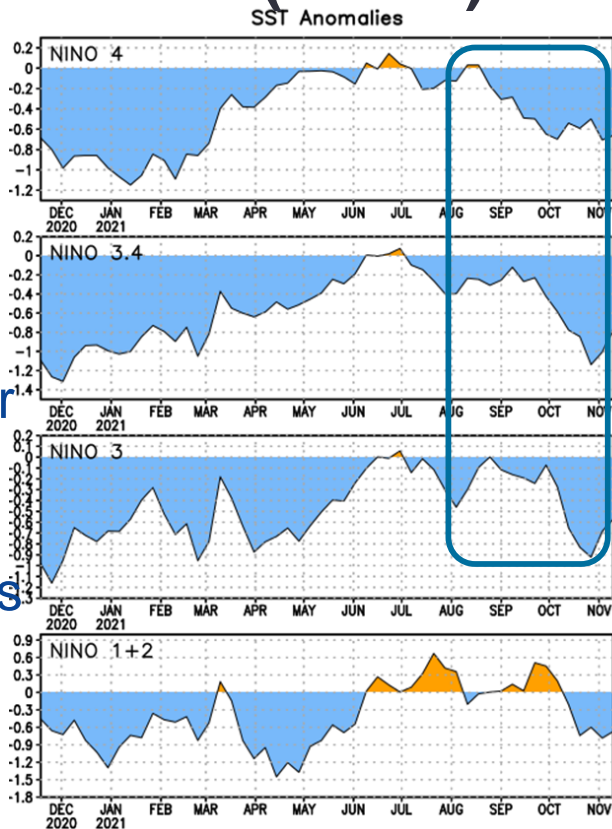
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# The “Why” of the Forecast:

## El Niño/Southern Oscillation (ENSO) in La Niña Phase

- La Niña is entrenched (blue colored areas and bar chart, right), and should remain through February
- Persistent warmth over several years in the southwest U.S./northern Mexico is expected to continue into early 2022



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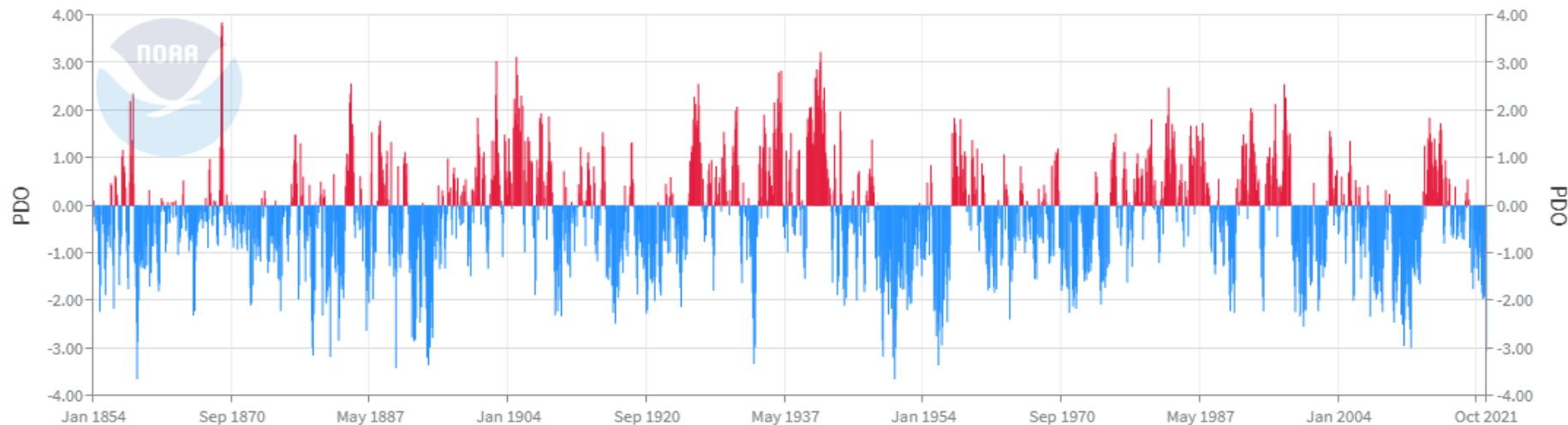
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# The “Why” of the Forecast:

## Pacific-Decadal Oscillation (PDO) in Negative Phase

Pacific Decadal Oscillation (PDO)



Source: <https://www.nci.noaa.gov/pub/data/cmb/ersst/v5/index/ersst.v5.pdo.dat>

- Past negative PDOs feature both warmer than average and freezes and freezing/frozen precipitation events. La Niña combined with negative PDO has some correlation to each, but more definitively favors a **drier than average** winter.
- Significant Freeze or Wintry Precipitation events included: Dec. 1989 (-0.1); Feb. 2011 (-1.46), Jan. 2014 (-0.56), Dec. 2017 (-0.03), Feb. 2021 (-1.09).

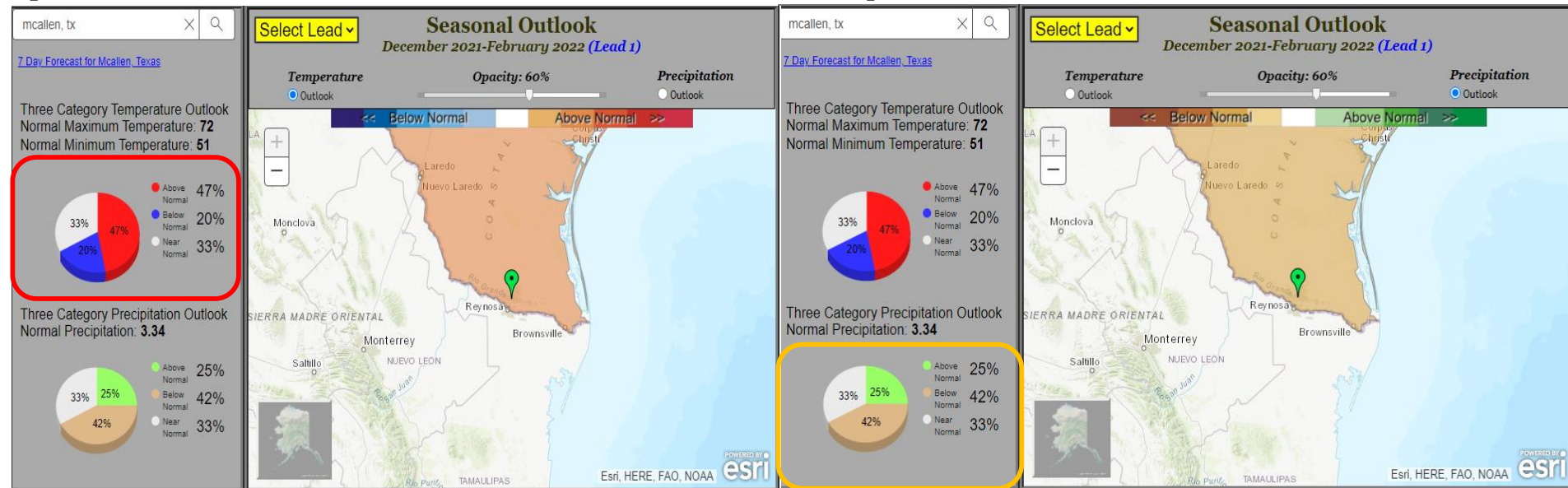


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# The Winter Outlook: Rio Grande Valley (McAllen as Anchor Point)



- **Temperature:** A 47% chance of above average. RGV Seasonal average – Afternoons, 72 to 77. Mornings: 48 to 55.
- **Precipitation:** A 42% chance of below average. Seasonal average: 2.5 to 4 inches of rainfall
- **For each:** Probability of the opposite (cooler and wetter) is 25 percent or less.



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# 2021 Temperatures: Ranked Values

Maximum 293-Day Mean Avg Temperature  
for Brownsville Area, TX (ThreadEx)

Maximum 293-Day Mean Avg Temperature  
for McAllen Area, TX (ThreadEx)

Maximum 293-Day Mean Avg Temperature  
for HARLINGEN, TX

[Click column heading to sort ascending, click again to sort descending.](#) [Click column heading to sort ascending, click again to sort descending.](#) [Click column heading to sort ascending, click again to sort descending.](#)

13	77.5	2016-01-02 through 2016-11-18	0	26	77.5	2008-01-02 through 2008-11-18	0	19	77.3	2006-01-02 through 2006-11-19	6
14	77.5	2005-01-01 through 2005-11-18	0	27	77.5	2008-01-01 through 2008-11-17	0	20	77.2	1912-01-02 through 1912-11-18	42
15	77.4	2016-01-01 through 2016-11-17	0	28	77.5	1945-01-01 through 1945-11-18	6	21	77.2	1998-01-02 through 1998-11-19	11
16	77.2	2009-01-01 through 2009-11-18	0	29	77.4	1994-01-01 through 1994-11-18	0	22	77.2	1912-01-03 through 1912-11-19	41
17	77.2	1950-01-01 through 1950-11-18	0	30	77.4	1980-01-01 through 1980-11-17	1	23	77.2	2005-01-02 through 2005-11-19	7
18	77.2	1902-01-01 through 1902-11-18	32	31	77.4	1980-01-02 through 1980-11-18	1	24	77.1	2009-01-02 through 2009-11-19	12
19	77.0	2021-01-01 through 2021-11-18	1	32	77.3	1996-01-01 through 1996-11-17	2	25	77.1	2002-01-02 through 2002-11-19	15
20	76.9	1953-01-01 through 1953-11-18	0	33	77.3	1996-01-02 through 1996-11-18	1	26	76.9	2011-01-02 through 2011-11-19	12
21	76.9	1998-01-01 through 1998-11-18	0	34	77.3	2002-01-01 through 2002-11-18	1	27	76.8	2021-01-02 through 2021-11-19	6
22	76.8	1982-01-01 through 1982-11-18	0	35	77.3	2021-01-01 through 2021-11-18	1	28	76.8	1933-01-02 through 1933-11-19	2
23	76.8	1999-01-01 through 1999-11-18	0	36	77.2	2001-01-01 through 2001-11-18	2	29	76.8	1999-01-02 through 1999-11-19	6
24	76.8	2004-01-02 through 2004-11-18	0	37	77.0	2007-01-01 through 2007-11-18	4	30	76.7	1954-01-02 through 1954-11-19	0
25	76.8	2004-01-02 through 2004-11-18	0	38	76.9	1953-01-01 through 1953-11-18	1	31	76.6	1943-01-02 through 1943-11-19	9

\*Note: Leap years appear in 1996, 2008, and 2016, hence the duplication

- Rio Grande Valley “anchor” cities: The break from the several years of top ten warmest rankings continues...
- ...yet, all rank in the top half of all time warmest temperatures. Brownsville (top 15 percent), McAllen (top 45 percent), and Harlingen (top 25 percent)
- Combination of the [mid-February 2021 freeze](#) and wetter-than-average conditions from May-July played a critical role in keeping annual temperatures down, somewhat, compared with recent years.

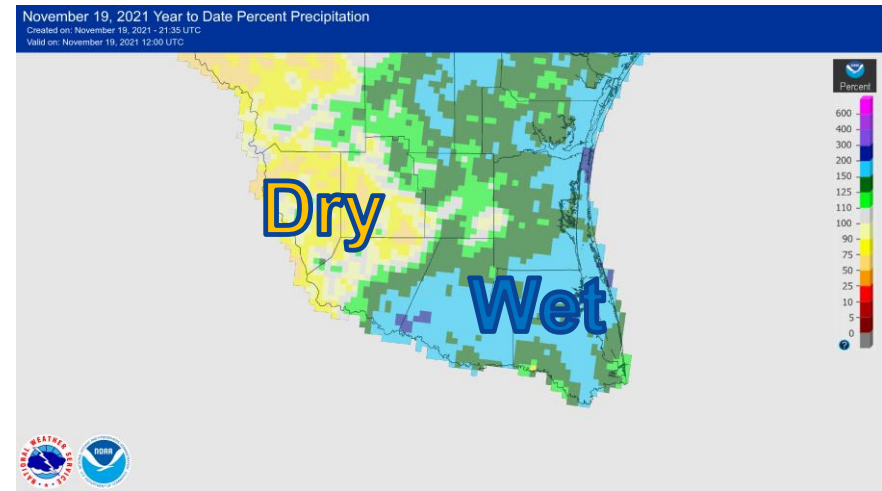
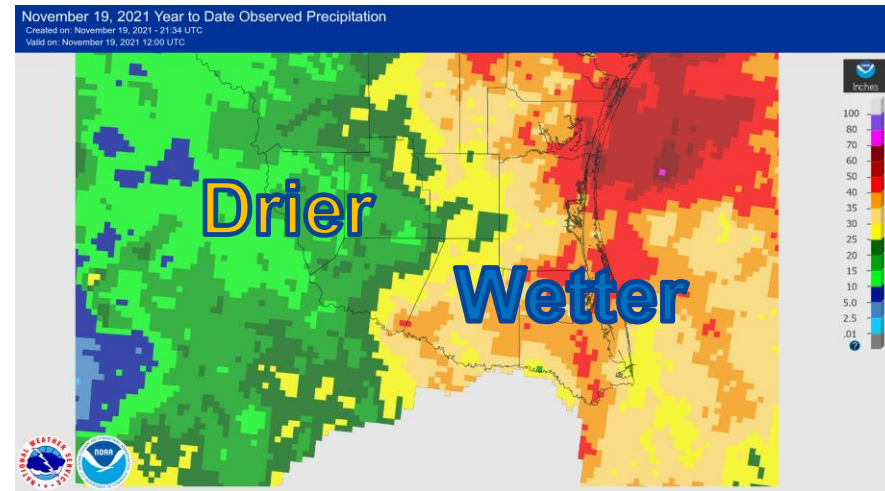


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# 2021 Rainfall So Far: Wet for all but Starr/Jim Hogg/Zapata



Rio Grande Valley “anchor” locations have been wetter than average for 2021 (and near record since May 1):

- **Brownsville (1878):** 37.99 inches (11<sup>th</sup>; record, 59.30 in 1886). Since May 1: 34.03 (5<sup>th</sup>; record: 53.84, 1886)
- **McAllen (1941):** 29.61 inches (10<sup>th</sup>; record, 37.17 in 1966). Since May 1: 27.73 (3<sup>rd</sup>; record, 28.81 in 1975)
- **Harlingen (1912):** 37.73 inches (8<sup>th</sup>; record: 42.95 in 1976). Since May 1: 35.64 (3<sup>rd</sup>; record: 39.35 in 1933)



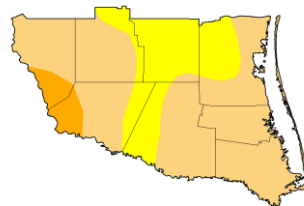
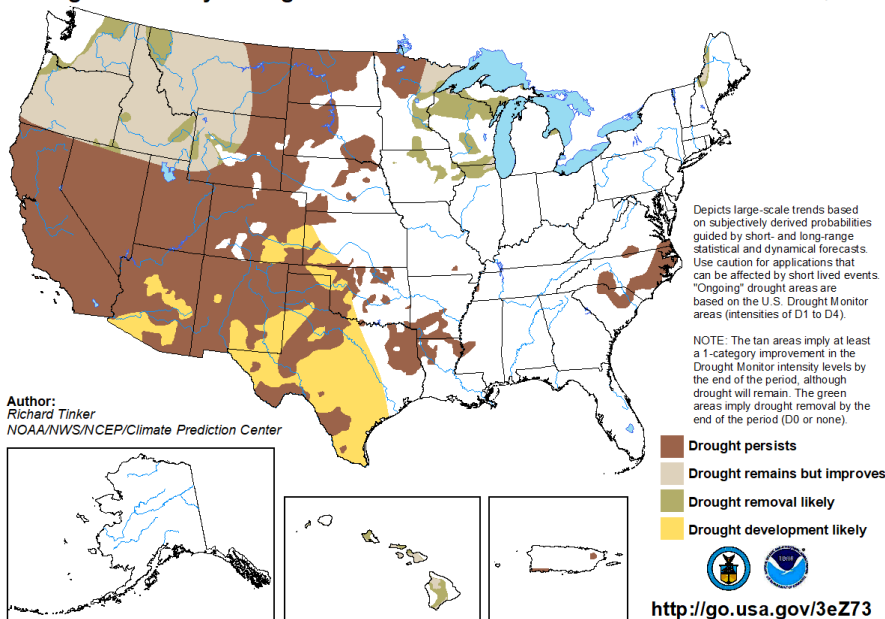
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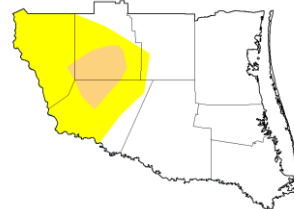


# The November-January “Droughtlook”

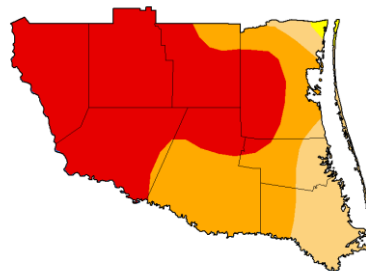
**U.S. Seasonal Drought Outlook** Valid for November 18, 2021 - February 28, 2022  
Drought Tendency During the Valid Period Released November 18, 2021



November 17, 2020



November 16, 2021



February 23, 2021

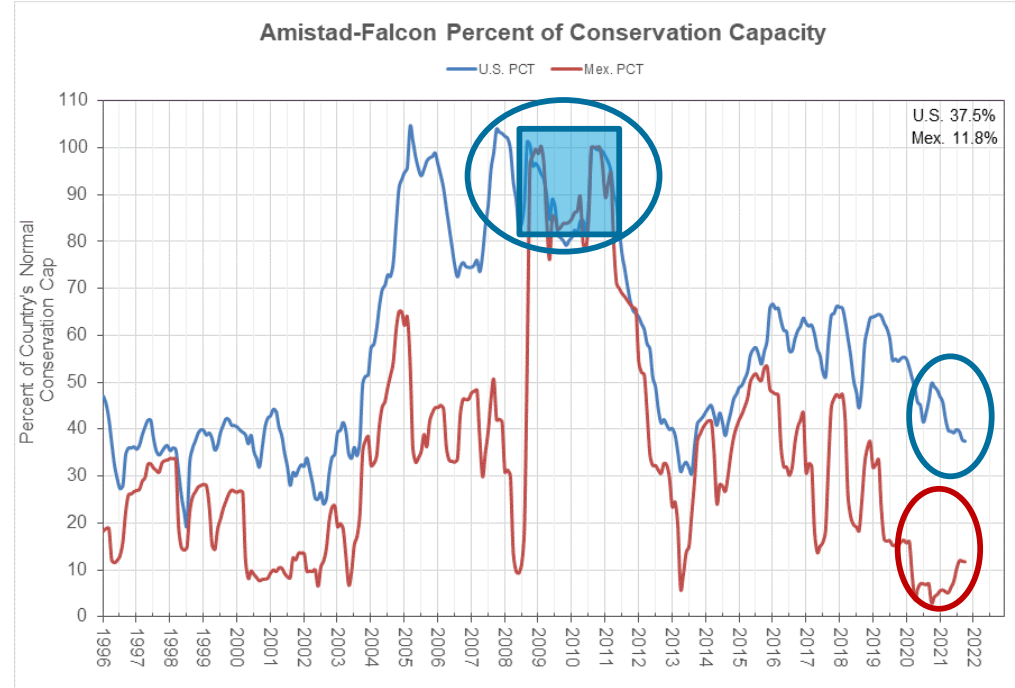
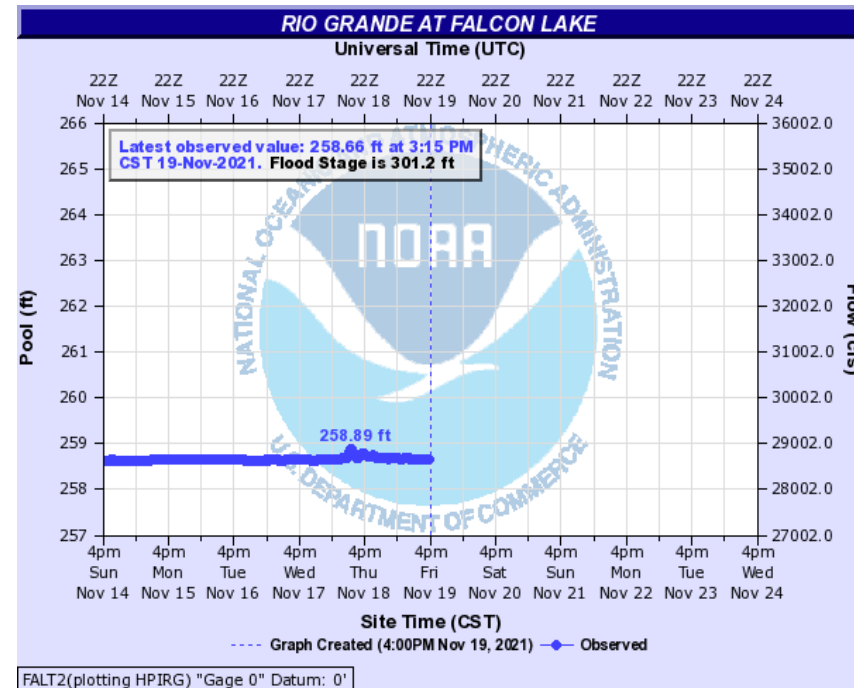
Conditions likely to deteriorate, though perhaps not as much as by the end of February 2021.



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# Falcon Reservoir Near 30-Year Lows in November 2021



- November 2021 total capacity, Falcon Reservoir: **16 percent**
- November 2010 total capacity, Falcon Reservoir: near **100 percent**



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**Frigid February**  
February 2 2011

Minimum Temperature (Blue)  
Lowest Wind Chill (Feels Like Temp) (Green)

Location	Minimum Temperature (°F)	Lowest Wind Chill (°F)
Portland, OR	31	WC 16
Seattle, WA	29	WC 16
San Francisco, CA	30	WC 16
San Jose, CA	26	WC 16
Albuquerque, NM	28	WC 16
Phoenix, AZ	30	WC 16
Las Vegas, NV	31	WC 16
San Antonio, TX	33	WC 20
Houston, TX	35	WC 20
New Orleans, LA	32	WC 16
Jacksonville, FL	31	WC 16
Fort Lauderdale, FL	32	WC 15
Miami, FL	30	WC 15
Fort Myers, FL	30	WC 12
Orlando, FL	30	WC 10
Daytona Beach, FL	30	WC 10
Fort Lauderdale, FL	30	WC 10
Fort Myers, FL	30	WC 10
Orlando, FL	30	WC 10
Daytona Beach, FL	30	WC 10
Fort Lauderdale, FL	30	WC 10
Fort Myers, FL	30	WC 10
Orlando, FL	30	WC 10
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Orlando, FL	3	

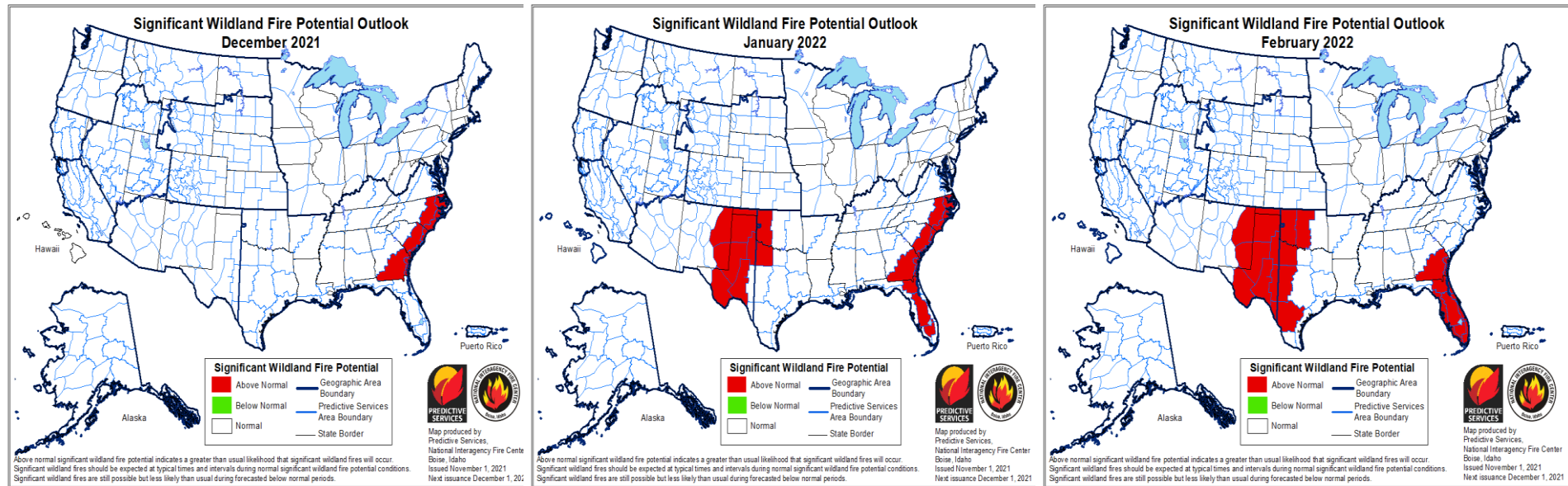


Records...Shattered! (Feb. 15, 2021)			Weather Forecast Office Brownsville/Rio Grande Valley, TX	
Preliminary Minimum Temperatures				
Location (records since)	Preliminary New Record	Prior Record (year)	Difference	
Brownsville (1878)	22*	25 (1895)	-3	
McAllen (1941)	22	35 (1946)	-13	
La Joya/Mission (1911)	21	33 (1951)	-12	
Raymondville (1913)	21	32 (1963)	-11	
Rio Grande City (1897)	20	25 (1963)	-5	
Falfurrias (1908)	16	26 (1963)	-10	
Edinburg (2000)	22	38 (2004)	-16	
Port Mansfield (1958)	21	36 (1963)	-15	
McCook (1942)	20	31 (1963)	-11	
San Manuel (2000)	20	37 (2010)	-17	
Santa Rosa (1987)	23	36 (1997)	-13	

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# Wildfire Spread Potential May Build into 2022



- Early-to-mid Autumn rains across the Rio Grande Valley are keeping fuels moist...
- ...but mild to warm weather is allowing some late-season growth, a potential contributor to additional fuel loading later in the winter
- 1-hour fuels (grasses) can dry out rapidly following “dry” fronts. 10-1000 hour fuels (brush and timber) could turn from moist to dry by mid to late winter 2021, and be “tinder” for rapid wildfire spread. Favored areas would be west of IH-69C from western Hidalgo/Brooks to Zapata County



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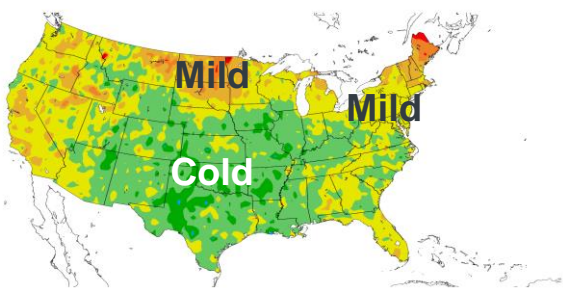
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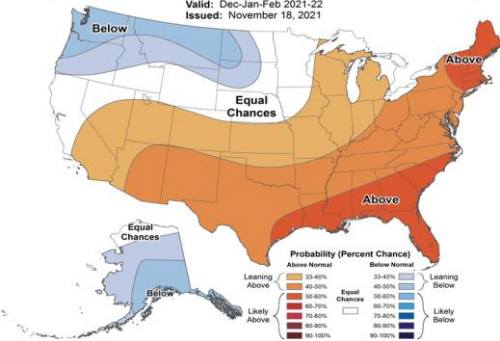
# 2020/2021 vs. 2021/2022

Departure from Normal Temperature (F)  
12/1/2020 – 2/28/2021



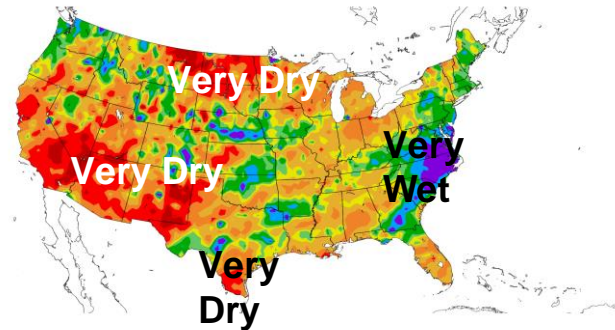
Generated 3/20/2021 at HPRCC using provisional data. NOAA Regional Climate Centers

Seasonal Temperature Outlook  
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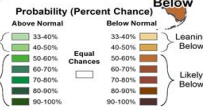
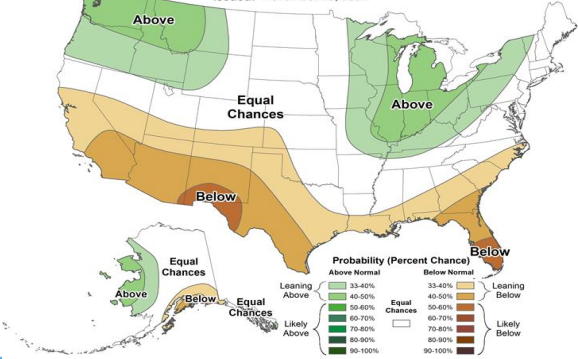
Observed  
Winter  
2020/2021

Percent of Normal Precipitation (%)  
12/1/2020 – 2/28/2021



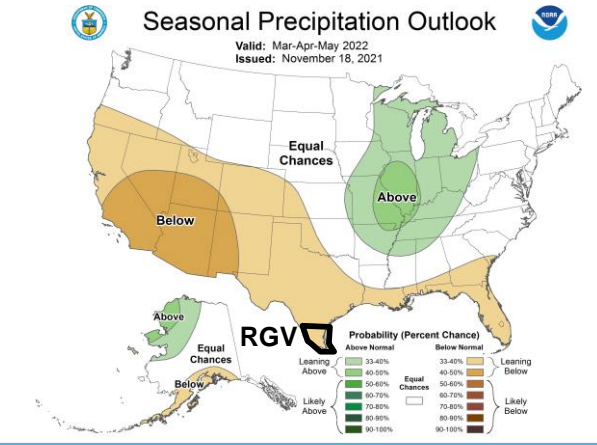
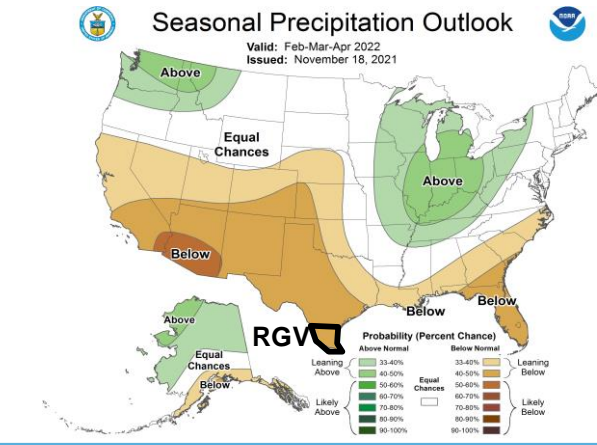
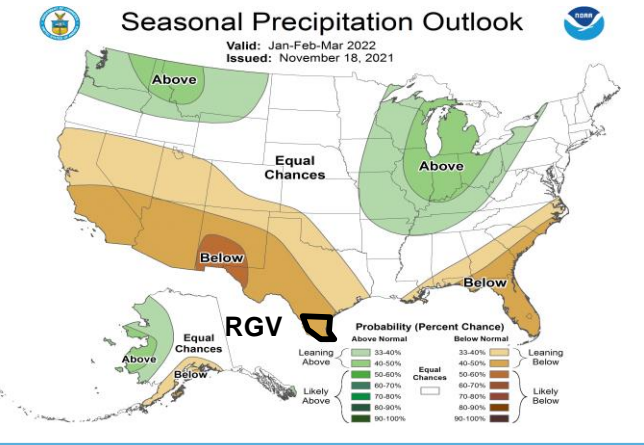
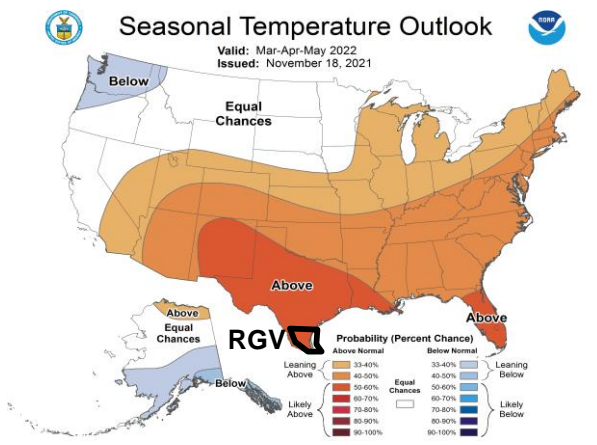
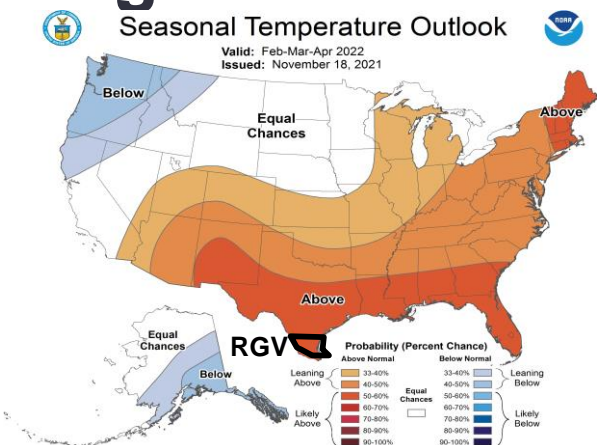
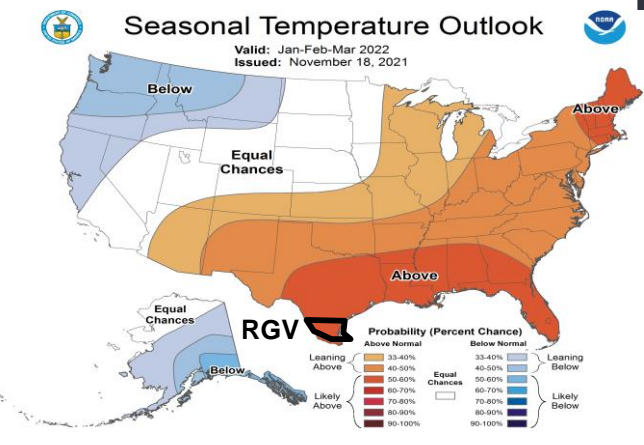
Generated 3/20/2021 at HPRCC using provisional data. NOAA Regional Climate Centers

Seasonal Precipitation Outlook  
Valid: Dec-Jan-Feb 2021-22  
Issued: November 18, 2021



Forecast  
Winter  
2021/2022

# Late Winter and Spring 2022: More of the Same?



# Final Thoughts

- **Worsening drought by late winter and especially spring 2021** remains a primary concern, but confidence has decreased on late winter levels based on November rains. Still, this means now is the time to look at agriculture and municipal water plans in case of shortages, **especially from Hidalgo/Brooks County to Zapata County**, along/west of IH-69C.
- The potential for **embedded freezes** requires a review of road treatment plans, as well as potential **agricultural protection and community plans for the power grid and the five P's (people, pets, pipes, plants, and power)**. **We are not explicitly forecasting a repeat of February 2021.** But keep it on the “back burner” of preparedness.
- **Wildfire growth and spread** is a concern based on this forecast by late winter, based on continued fuel growth at the end of November followed by fuel “loading” in drier/warm winter weather. Freeze-cured brush/grass would increase the “dead” fuel load.



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